

5                   **SYSTEM AND METHOD FOR TARGETING OBJECT ORIENTED  
                      AUDIO VIDEO CONTENT TO USERS**

**Field of the Invention**

10               The present invention relates to electronic information access systems and more specifically to a media object based system and method for targeting information to users based upon user profiles.

**Background of the Invention**

15               Television, radio, Internet, and other multimedia content creators and transmitters often rely upon mass market commercial advertising to sponsor programming presented to their viewers and listeners (for purposes of simplicity, those who receive programming in audio, video, textual, graphic, or other formats shall be referred to as "users"). Commonly, such advertising is provided as distinct audio and video segments which are presented during an interruption in a  
20               program the user has selected (for example, a Nike® commercial during a football game, a banner advertisement on an Internet page, or a logo on a video screen). While currently used advertising mechanisms have been marginally successful in promoting goods and services to non-participatory audiences (i.e., users who do not interact with the program and merely watch, listen, or read the presented content), such mechanisms leave a lot to be desired in today's multimedia,  
25               interactive environment. More specifically, such advertising mechanisms are often undesirable due to bandwidth considerations, transmission formats, and the fact that they do not facilitate the targeting of advertising and/or programming to users. As a result, much of the advertising and

programming content currently provided is often misdirected, presented to a disinterested audience, or completely ignored by users.

Further compounding the task of garnering user interest in advertising and programming segments, is the fact that most of the programming currently being offered is provided on a national and/or regional basis. As a result many of the advertisements are also national/regional in scope and are not targeted to specific demographic groups or users matching specific user profiles. Often during the national/regional broadcasts, local affiliates attempt to focus their advertising slots and programming to the local audience by inserting locally generated commercials into the program, providing scrolling messages on the bottom of video displays (for example, severe weather warnings), and by other techniques. However, even the local affiliates are not specifically targeting advertising or programming to specific users. In short, the systems and processes currently available do not allow the advertisers, content creators (for both the advertisement and the underlying program), and/or transmitters to specifically tailor and target advertising and programming to specific users. As a result, much of today's commercial advertising and programming is ineffective, mis-targeted, and often totally ignored by users.

Various approaches have recently been proposed to address the inefficient use and targeting of advertising/programming, especially television and video based advertising. Commonly such approaches provide for the separation of a program (for example, a football game) into numerous 6 MHz analog channels, upon which unique commercial advertisements are inserted, with each channel providing different commercials. The user's system receives all of these channels and, according to user selections or a pre-set user profile, selects one of the channels for presenting the advertising and associated programming. As is readily appreciated by those skilled in the art, such an approach generally provides a limited number of programming signals into which the targeted advertising may be inserted (thus, minimizing the specificity of which such targeted advertising may be provided), while also requiring multiple signals to

transmit the same underlying program and thus wasting precious bandwidth and transmission resources.

Additionally, those systems which attempt to target advertising to users generally rely upon user responses to questionnaires and other survey information and do not provide  
5 advertisers with sufficient, real-time information to tailor advertising to specific users. As such, a need exists for systems and processes, which provide efficient and effective targeted advertising/programming to users without requiring massive tradeoffs in bandwidth, transmission capacities, or other variables.

10 **Summary of the Invention**

The present invention provides a system and process for targeting programming (including, but not limited to, advertising) to users by utilizing media object to provide specific content to a user, or groups of users, based upon user profiling information. More specifically, the present invention provides a system and method for generating media object based content,  
15 formatting and transmitting the content, and receiving and presenting the content to a user. The media object based content is preferably presented to users based upon profile established for the user. As such, the systems and processes of the present invention enables media object content creators, producers, broadcasters, and others involved in the transmission of multimedia content to users to custom tailor such content for unique users and/or groups of users based upon user  
20 profiles.

The system utilizes user purchase behaviors, on-line activity, responses by a user to a survey, demographic information, user viewing habits, statistical information, regional information and other information to generate a user profile. The user profile may be generated at a receiving system, a transmitting system, or any other location (for example, by an internet  
25 service provider). Such profile information is utilized to identify user's based upon user profiles,

create media objects for such profiles and present specific media objects to specific user profiles.

As such, the present invention facilitates targeted advertising, targeted programming and other presentations to users. Instead of requiring all users to see a specific program, advertisement, game, show, or other presentation, the present invention facilitates the customization of each user's program based upon user profiles and the interchanging of one media object for another media object.

More specifically, in the preferred embodiment of the present invention, a transmitting system, a receiving system and a user profiling system are used to target content to users. The content is provided in the form of media objects, preferably using the MPEG-4 format, however, other formats may also be utilized, created by media object creators on a pre-recorded or live basis. The media objects are suitably communicated to the receiving system via any transmission medium, including broadcast, wireless, wireline, satellite, cable, fiber optics, microwave, and millimeter wave. Similarly, network connections may also be utilized to transmit the user profile information and/or the media objects to the user. Such network connections may utilize any known in the art including, the Internet, intranet, ATM network, private network, wireless network, wide area network, local area network, and a public network.

Further, user-profiling information is utilized by the receiving system and/or the transmitting system to determine which of a plurality of media objects to present to a specific user or group of users at any instance during a program, advertisement or other multi-media presentation. The media objects may be provided in any medium desired including, for example, audio, video, graphical, and textual. Further, such media objects may be provided by remote creators, via local storage mediums, via network broadcasts, cable systems, and other mediums to the user's receiving system. Similarly, the user profiling information may be local to the user or remote, for example, accessible by the media object creators and/or the transmitting system.

Further features and functions of the present invention will become apparent from a consideration of the following detailed description, drawing figures and claims.

### **Brief Description of the Drawing Figures**

5           Figure 1 is a schematic representation of a preferred embodiment of a system providing media object based content targeted to users based upon user profiles.

Figure 2 is a schematic representation of the receiving system of Figure 1 by which the media objects are received and selected for presentation to a user by the preferred embodiment.

10           Figure 3 is an illustrative example of the receiving system of Figure 2 for selecting one media object from a plurality of media objects provided in an automobile advertisement.

Figure 4 is a flow chart illustrating the process by which the present invention may be utilized to push targeted advertising and programming to users via media objects selected based upon a user profile.

15           Figure 5 is a flow chart illustrating the process by which the present invention may be utilized by a user to pull media objects, which are provided to the user based upon their user profile.

### **Detailed Description**

20           The present invention provides a system and method for targeting audio and video content (for example, advertising and programming) to users by utilizing media objects and user responses thereto. Those skilled in the art of data transmission techniques and capabilities are familiar with the MPEG-4 (Motion Picture Expert Group) standard which has been promulgated in order to standardize the creation, transmission, distribution, and reception of media objects based upon audio, video, graphical and various other forms of data and information (hereafter,  
25           generically referred to as "content"). The present invention preferably utilizes the media object

specifications of MPEG-4 and various other object based data transmission systems to generate user profiles, transmit content to users based upon such profiles, and thereby provide targeted advertising/programming, in the form of media objects, to such users. While the present invention is herein described with reference to the MPEG-4 standards, it is to be appreciated that various other systems and methods for transmitting and receiving media object based content may be utilized in conjunction with the present invention. Such systems include, for example, the Sony PlayStation®, which provides the capability of rendering graphical media objects over real-time video.

Additionally, throughout this specification, reference is made to media object oriented content, MPEG-4, and various other terms and standards promulgated by the MPEG. As used herein, “media objects” are defined in accordance with the definitions and descriptions provided in the “Overview of the MPEG-4 Standard” provided by the *International Organization for Standardization, ISO/IEC JTC 1/SC29/WG11 N3156, December 1999/Maui*, the contents of which are herein incorporated by reference. More specifically, “media objects” are commonly representations of aural, visual or audio-visual content which may be of natural or synthetic origin (i.e., a recording or a computer generated object). As is commonly known in the art, such media objects are commonly organized in a hierarchy with primitive objects (for example, still images, video objects, audio objects, etc.) and coded representations of objects (for example, text, graphics, synthetic heads, and synthetic sounds). These various objects are utilized to describe how the object is utilized in an audio, video, or audio-visual stream of data and allow each object to be represented independently of any other object and/or in reference to other objects. For example, a television commercial for an automobile may consist of an automobile, a scenery or route upon which the automobile travels, and an audio signal (for example, a voice describing the characteristics of the automobile, background sounds adding additional realism to the presentation, and background music). Each of these objects may be interchanged with another

object (for example, a car for a truck, or a rock soundtrack for an easy listening soundtrack) without affecting the other objects, or specifically affecting the other objects - as desired by the content creator.

Additionally, throughout this application a “stream of data” (a.k.a., “streaming” or “streaming media”) is herein defined in accordance with the definition provided by Webopedia ([www.webopedia.com](http://www.webopedia.com)) as “a technique for transferring data such that it can be processed as a steady and continuous stream ... [such that] a client browser or plug-in can start displaying the data before the entire file has been transmitted.” Examples of technologies capable of supporting “streaming” include, but are not limited to, Progressive Network’s RealAudio®, Real Network’s Real Video®, Microsoft’s NetShow®, and RTSP (Real Time Streaming Protocol). The present invention may utilize any of the various streaming technologies currently, or in the future, available as desired and/or as necessary to transmit media objects. Additionally, it is to be appreciated that non-streaming technologies may also be utilized in conjunction with the present invention including, for example, content presented via a compact disc or digital video disc, by completing a file transfer before beginning the presentation, or other transfer means.

Further, it is to be appreciated that the present invention may be utilized in a multicast environment, i.e., where the content/media objects are transmitted to a select group of users. Similarly, the present invention may be utilized in a unicast environment (i.e., where the content/media objects are transmitted to a single user) and/or a broadcast environment (i.e., where the content/media objects are transmitted to every user connected to a network, or, in the case of a radio frequency or satellite broadcast, to all users equipped with a proper receiving system).

As shown in Figure 1, one system 100 implementing the present invention includes three major elements: a transmitting system 102, a receiving system 104, and a user profiling system 106. Each of these three major elements is explained further in greater detail below.

Additionally, the system 100 preferably includes media object creators 108, which create content in the form of media objects, which are utilized in the targeted advertising. The system 100 also preferably includes various ancillary devices such as user input devices 110, presentation systems 112, and data storage devices 114. The system 100 preferably includes all of those components and elements necessary to provide media object based targeted advertising. It is to be appreciated, however, that such components and elements may be utilized separately, in conjunction with existing content distribution systems, and/or as components of other systems without departing from the spirit or scope of the present invention.

Referring again to Figure 1 and as mentioned previously, one of the major elements utilized in the preferred system 100 is the transmitting system 102. The transmitting system 102 may include any medium, system, or device capable of communicating media object oriented content to a user including, but not limited to: wireless transmission systems (for example, analog and digital television broadcasts, analog and digital radio broadcasts, analog and digital wireless communications networks, microwave systems, millimeter wave systems, infrared systems, and satellite broadcast systems); wire based transmission systems (for example, analog and digital cable systems, coaxial connections, fiber optic links, telephone systems, closed circuit systems, Very high speed Digital Subscriber Lines (VDSL), VGD, and any other wired connection); stand-alone systems for providing pre-recorded programs (for example, programs provided on compact discs, digital versatile discs, video tape, PlayStation cartridges, memory sticks, magnetic storage mediums, optical storage mediums, data storage devices, Flash memory, random access memory (RAM), and read only memory (ROM)); and network connections (for example, the Internet, private network, public network, wireless network, wired network, ATM networks wide area network, local area network, and intranet). Such media objects are communicated to the transmitting system by the media object creators 108 over an interface 105 between the media object creators and the input port 103. The interface 105 may be any which



facilitates the transfer of media objects to the transmitting system. Similarly, the input port 103 may include any additional processor necessary to format a media object received in a given format into a format compatible with the transmitting system.

Additionally, the transmitting system may transmit the media objects as a live signal or as  
5 a pre-recorded signal from a previously recorded medium, and with respect to an Internet connection, the media objects may be streamed. Similarly, media objects may be communicated to users using any of the various transmission protocols known in the art including, for example, IEEE 802.11B, RTP, UDP, TCP/IP, Ethernet, and ATM. Further, the media objects may be formatted according to various schemes including, MPEG-1, MPEG-2, MPEG-4, MPEG-7,  
10 JPEG, motion JPEG, GIF, QuickTime, ActiveMovie, digital video interactive (DVI), Indeo, and IP wrapped MPEG-4 for streaming. As such, any medium, system, device, or protocol, which facilitates the transfer of media object oriented content to a user may be utilized by the system 100. In short, the transmitting system 102 is content, device, system, medium and protocol independent, provided the selected system supports the transmission and presentation of media  
15 objects to users.

The media object creators 108 may also utilize numerous software programs, content creation techniques, and content capturing devices to generate the media objects utilized in the system 100. As stated previously, media objects may include natural, synthetic, and combined natural/synthetic content. The media object creators 108 may utilize any of the various devices  
20 and methodologies commonly known to capture or create such content. For example, one creator may utilize microphones to capture audio sounds whereas another creator may utilize a synthesizer to generate the desired audio sounds. The present system 100 is capable of providing targeted advertising and programming to users regardless of the techniques and systems utilized by the media object creators 108. Further, Figure 1 identifies three types of data commonly  
25 utilized in creating media objects, namely: video data 116, audio data 118, and graphic/textual

data 120. The system 100, however, is not limited to specific data types and may incorporate any type of data including, but not limited to, audio data, video data, graphic data, textual data, animations, multimedia, slow frame video data, video stills, sequences of individual frames, virtual reality data, live data, pre-recorded data, and computer generated data. Additionally, the media object creators may provide media object based content targeted to a user in any type of program including, for example, a news program, an advertisement, a sports program, an entertainment program, a music video, a game show program, a motion picture program, a video game, a video program, an audio program, an educational program, a live program, a pre-recorded program, and in a noncommercial program. Similarly, the media objects may relate to a polling question, provide responses by the user or the media object creator to queries, and may facilitate bi-directional communications (for example, via a chat interface, instant messaging interface, or an electronic mail interface) between and among the media object creator, the transmitting system, the receiving system, and the user. The system 100 suitably includes those software and/or hardware components necessary to provide a chat interface, instant messaging interface and/or an electronic mail interface. Such interfaces are known in the art, and any of such may be suitably incorporated into the system 100 as desired. Additionally, such interfaces may be provided between users, the transmitting system, media object creators, other users, and any other person or entity using a compatible system.

As previously mentioned above, the system 100 also includes a presentation system 112.

The presentation system 112 provides at least one output device by which the content of the media objects is presented to a user. Any device capable of presenting media objects to users may be utilized as the presentation system 112. Such devices include, but are not limited to, television receivers, home theater systems, audio systems, computer workstations, laptop computers, personal data assistants, set top boxes, in-home communications systems, wireless communication systems (for example, pagers and wireless telephones), web tablets, virtual reality

systems, web phones, printers, heads-up display, gaming consoles, tactile or sensory perceptible signal generators (for example, a vibration or motion), and various other devices or combinations of devices. For example, a presentation system may include a video monitor, an audio sound system, and a motion generator such that a program (for example, one simulating traveling in a car or plane) is simulated using various synchronized media objects. In short, the presentation system 112 is not to be construed as being limited to any specific systems, devices, or components, and may utilize any device capable of presenting media objects to a user.

Similarly, numerous input devices 110 may be utilized by a user to identify themselves, select media objects, select programming signals, and respond to queries. Such input devices include remote control devices, keyboards, scanners (for example, retinal and fingerprint), mouse, trackballs, virtual reality sensors, voice recognition systems, voice verification systems, push buttons, touch screens, joy sticks, brain wave devices, and other such devices.

Additionally, data storage devices 114 are preferably utilized in the system 100 for the temporary or permanent storage of media objects, the content provided in the media objects, transmission signals (for example, in decompressed and/or demultiplexed formats), profile information, operating routines, and any other information utilized by the system 100. The data storage devices 114 may be provided in conjunction with the receiving system 104, may be a stand-alone device co-located with the receiving system 104, may be remotely accessed (for example, via an Internet connection), may be provided in the transmitting system 102, in the user profiling system 106, with the media object creators 108, or at any other location in the system 100. In the preferred embodiment, the data storage devices are provided with the receiving system 104. The data storage devices 114 may also utilize a combination of local and remote storage devices in order to provide the desired features and functions of the system 100. Those skilled in the art appreciate that various data storage devices, algorithms, programs, and systems may be utilized in conjunction with the system 100. Examples of such data storage devices

include, but are not limited to, hard drives, floppy discs, CD ROMS, DVDs, tape drives, memory sticks, remote databases, and local databases.

As previously mentioned herein, the system 100 also includes a receiving system 104, which receives the signal provided by the transmitting system 102. As shown in Figure 2, an illustrative embodiment of a receiving system 104 is provided. It is to be appreciated that such system 104 may be provided in hardware and/or software formats and Figure 2 is intended to illustrate those functions commonly performed by an MPEG-4 equipped receiving system. The actual layout and configuration of such functional components may vary as desired and commonly appreciated by those skilled in the art. The system 104 is preferably configured to support the reception, selection, and composition of media object based content into audio, video, and audio-video presentations. However, various other forms and methods of presenting content may also be supported by the receiving system 104 including graphical, textual, and virtual reality content. Additionally, for purposes of the present description, the receiving system 104 is described in the context of presenting an audio-video program (with or without graphics or text enhancements such as MPEG stills), but the receiving system 104 is not to be construed as being so limited.

As shown, the receiving system 104 preferably includes a transceiver/interface 202. The transceiver/interface 202 provides the communications connectivity capabilities necessary to receive and transmit communications signals containing media objects or other information between various sources, via various mediums. More specifically, the receiving system 104 is not limited to receiving media objects in communications signals from only specific sources or only via specific mediums and may be configured to support any source and/or medium and provide bi-directional communications, as desired. Those skilled in the art appreciate that the transceiver/interface 202 may utilize various components and systems to receive and process communications signals containing media objects. For example, receiving a communications

signal from a CD-ROM player might entail utilizing a serial bus, an RCA-plug, a parallel port, or even a Universal Serial Bus, RGB, firewire (IEEE1494), or any other conventional interface. Whereas, receiving a satellite or radio frequency broadcast may require antennas, low noise amplifiers, low noise block-down converters (LNBs), filters, receivers, and various other components, all of which are known in the art. As such, the receiving system 104 may be configured to receive communications signals containing media objects from any medium and, if desired, from multiple mediums simultaneously. Additionally, the receiving system 104, as desired, may be configured to transmit information to the transmitting system 102 and/or the user profiling system 106.

In addition to establishing the desired communications links with the transmitting system 102, the transceiver/interface 202 also preferably performs standard communications signal processing functions; for example, separating the various communications signals into separate channels and sub-channels, filtering data, restoring lost data, and those various other functions commonly performed by receiving devices. As shown in Figure 2, the transceiver/interface 202 preferably breaks-out various sub-channels (for example, an audio, video, graphic, and a textual sub-channel) from a selected channel and provides each of the sub-channels to the appropriate demultiplexers 204. For example, a cable signal often contains numerous programming signals (i.e., ABC, CBS, FOX, etc.). Each of these programming signals contains sub-channels (e.g., multiple tracks) in which program elements provide video, audio, and textual information. Those skilled in the art appreciate that such programming signals and sub-channels (e.g., multiple tracks) may be provided in digital or analog signal formats. Additionally, the transceiver/interface 202 separates the incoming cable signal into the various programming signals and, based upon the user's selection, processes the selected programming signal(s) by breaking out the various program elements and sending such elements to the corresponding demultiplexers 204. The separation of transmitted signals into channels and program elements is

well known in the art. The receiving system 104 may utilize any methodology and/or components which provide/support the features and functions specified herein and those features and functions commonly performed by receiving systems.

Upon receiving a breakout segment of the program elements from the received  
5 transmission signal, the demultiplexers 204 preferably select specific data packets (which are preferably specific media objects) from a plurality of available data packets. Next, the selected data packets are either provided to the corresponding decompressor 208 or sent to a buffer 206 in which the selected data packet is temporarily stored until needed. As is commonly known, communications signals are commonly transmitted after being compressed utilizing a data  
10 compression algorithm. The use of data compression and decompression algorithms is well known in the art, and is not discussed in detail herein. Similarly, the use of buffers to store data packets for either real-time streaming or later playback is well known. The system 100 may utilize buffers of various sizes and configurations, as necessary, to support the various data types and data sizes being received by the receiving system 104.

15 When the time for presenting a specific media object arrives, the data packet containing the media object has preferably been retrieved from the buffer 206, as necessary, and decompressed 208. The decompressed media object is provided to the composition generator 210. The composition generator 210 composes the various data packets into a composite presentation signal. The composite presentation signal may include video elements, audio  
20 elements, textual elements, graphical elements, virtual reality elements, and other elements. These elements may then be presented to a user via various devices including, but not limited to, television receivers, home theater systems, audio systems, computer workstations, laptop computers, personal data assistants, set top boxes, in-home communications systems, wireless communication systems (for example, pagers and wireless telephones), web tablets, virtual reality  
25 systems, web phones, printers, heads-up display, gaming consoles, tactile or sensory perceptible

signal generators (for example, a vibration or motion), and various other devices or combinations of devices. The system 100 supports all levels of interactive multi-media presentation systems and the providing of media objects to users of such systems.

Coordination and control of the various before mentioned functions of the receiving system 104 are provided by the controller 212. The controller 212 provides the various control signals needed to control the numerous components (i.e., the transceiver/interface, demultiplexers, buffers, decompressors, and composition generator) utilized by the receiving system 104 to present media object based content targeted to users. The controller 212 also contains a timing and synchronization unit, which preferably coordinates and synchronizes the spatial and temporal presentation of the various media objects provided in a program. For example, an audio-visual program might contain a synthetic talking head. The timing and synchronization unit coordinates the presentation of the synthetic talking head and the corresponding audio media objects such that the head appears to actually speak the words provided in the audio media objects. Additionally, the controller 212 is preferably in communication with a user device 110. The user device 110 facilitates interaction between the user and the receiving system 104 by receiving selections, requests, queries, and responses by the user to the system 100.

The controller 212 is also, preferably, in communication with a data storage device 114. As mentioned previously, the data storage device 114 may be remote or local to the receiving system 104, as desired. The controller 212 preferably retrieves various configuration and control information from the data storage device 114, as necessary, to receive, process and present the media objects. The data storage device 114 may also be utilized to store user profile information, parental control information, provide additional buffer space for media objects, and perform various other commonly provided data storage functions.

In addition to providing transmission and reception systems for media objects, the present invention provides for the targeting of such media objects to users based upon user profiles and other demographic information. Referring again to Figure 1 and as mentioned previously, the system 100 includes a user profiling system 106. The user profiling system 106 utilizes  
5 demographic and/or user specific information to determine which of the various media objects are available, at any time, to present and target to a user at a particular instance during a program.

The user profiling system 106 uses information collected via a variety of sources and/or methodologies to develop a user profile and determine which media objects to present to a user during a program. In a most basic embodiment, the user profile information is based upon  
10 demographic or regional information collected/generated by the transmitting system 102 or by the media object creators 108. The user profiling system 106 may also be provided by an online service provider who generates user profiles based upon user responses to surveys, web page hits, demographic information, user viewing habits (for example, compilations thereof provided by a cable operator or via a TiVO® unit), purchasing behavior (both on-line and non-on-line  
15 purchases), regional information, and/or statistical information.

For example, automobile companies realize that residents of San Diego generally purchase more convertibles than residents of Seattle. As such, a national television advertisement for a Ford Mustang® might include a media object directing a San Diego network affiliate's transmitting system 102 to select from a national data feed media objects (i.e., a data  
20 packet) depicting a convertible in San Diego. Meanwhile, during the broadcast of the same commercial, the network broadcaster may direct the Seattle affiliate to select media objects depicting a hard top Mustang in Seattle. The various other elements of the commercial (i.e., the actors, voice, and music) might be the same nation-wide with only the media objects for the car's roof and the baseline scenery being interchangeable.



Similarly, the selection of the media object (i.e., the convertible or the hard top roof) might also be accomplished by the receiving system 104, with or without user input. In this embodiment, both media objects (the convertible roof and the hard top roof) are transmitted as multiplexed data packets in the same programming signal to the receiving system 104. The receiving system 104 accesses a geographic region indicator which is preferably stored in the data storage device 114 to determine which of the received data packets the demultiplexer 204 is to select and provide to the other devices within the system 104 for further processing. As may be appreciated, the data storage device 114 may be automatically or manually set with a region indicator via commonly known processes such as using a telephone area code to designate a geographic area. Those skilled in the art appreciate the various methods by which a receiving system 104 may be configured to respond to a regional, demographic, or other generic (non-user specific) indicator.

In another embodiment, the system 100 is configured to provide even more specific media object based targeted content. In this embodiment, the system 100 is configured to utilize specific information provided by the user, for example, answers to a survey or questionnaire. Based upon the user provided information, the user profiling system 106, which is preferably co-located with the transmitting system 102 and/or the media object creators 108, collects the data, filters the data, sorts the data, and manipulates the data to generate a user profile. Statistical sampling and other data manipulation techniques may also be utilized to characterize and establish user profiles for specific users or other groupings of users (for example, a grouping based upon geographic location). Additionally, V-chip data (i.e., a chip utilized to set parental controls on a multimedia device such as a television) may be utilized to generate a user profile. For example, information provided by a parent with four children aged 6 months to 10 years old may be used to generate a profile of an individual who might be interested in purchasing a mini-van. In contrast, a single professional with no children would probably generate a profile of a

user interested in a sports car. Thus, the system 100 uses the provided information and/or other information and statistics to generate a user profile. The user profile information, in turn, is utilized by media object creators 108, broadcasters, local affiliates, and others on the transmitting side of the system to provide targeted advertising and programming to users by originating and transmitting media objects targeted to specific users and/or classifications of users.

Throughout this description reference has been made to using media objects to provide targeted advertising and programming based upon user profiles. While the traditional methods of advertising goods and services (for example, commercial advertisements during interruptions in a program) may be utilized by the system 100, the system also supports non-interrupting advertising and programming by providing program content (as compared with the content of an advertisement) in which media objects in the program itself are selected and presented to the user based upon a user profile. These media objects may then be selected, deleted and saved by the user while being presented with the underlying program. Such actions by the user, for example, deleting a first media object while selecting a second media object, may be suitably utilized by the system to determine a user profile. For example, a user who selects a sports car might result in a profile of a person who is more concerned about driving excitement than the person who selects an economy car. Such profile information is suitably stored by the receiving system 104 and/or the transmitting side (i.e., the transmitting system and/or the media object creators) such that subsequent media objects may then be inserted by the program creators and/or the transmitting system into the programming signal sent to the profiled user. In this manner, the program content presented to a user may be uniquely tailored to a user such that targeted content is provided without any user actions required and without any interruptions of the advertising and/or programming.

The system 100 may also be configured to operate at a highly interactive level of user profiling. In this embodiment, the user profiling system 106 is preferably in communication with

both the transmitting system and/or the media object creators 108, and the receiving system 104.

As the user selects programs and content to receive, the receiving system 104 relays such information to the user profiling system 106 via a communications link. The user profiling

system 106 may be a stand-alone system, an Internet based system, or any other system capable

5 of generating user profiles based upon user viewing habits (or listening habits - in the case of an audio program) and/or purchasing behavior. Similarly, the communications link between the

receiving system 104 and the user profiling system 106 may be any link including, but not limited to, an Internet link, a telephone link, a digital subscriber link, a wireless link, and a cable link.

Additionally, communications links between the user profiling system 106, the transmitting

10 system 102, the media object creators 108, and the data storage device 114 are also preferably provided, thereby allowing the media object creators and transmitters (as desired) to program media object selection guidelines into the receiving system 104, at any time, based upon the user profile.

While the user profiling system 106 is preferably configured to interface with both the

15 transmitting system 102 and the receiving system 104, the system 100 may also be configured such that user profiling information and features are utilized only by the receiving system 104. In

such an embodiment, the media object creators 108 and transmitting system 102 suitably create media objects for predetermined profiles and transmit such media objects to the receiving system

104. The receiving system 104 then determines which of the various media objects to use based

20 upon the user profile provided by the receiving system 104 and/or the data storage device 114.

As such, this embodiment does not require bi-directional communication links between the receiving system 104 and the transmitting system 102.

One example of such an embodiment in use is illustrated in Figure 3. As shown, the receiving system 104 receives a program containing multiple video and audio objects of which at

25 least one of each is selected for presentation to the user based upon a locally stored user profile.

For example, an automobile manufacturer desires to market their vehicles during the Super Bowl.

Instead of presenting a separate commercial for each of its potential markets (for example, the sports car, mini-van, and sport utility markets), the manufacturer merely provides a single commercial with multiple media objects (for example, video media objects and associated audio media objects for each type of vehicle) while also providing a baseline promotional media object 320 (for example, a promotional special such as 2.9% financing or \$1000 back) overlaid on a given background media object 312. Further, real time marketing conditions can dictate the selection and presentation of an object. For example, local sales taxes may be included in the sales price in one town (or geographical area) versus another town, thus leading to different promotional objects.

Each of these media objects are received by the receiving system 104 and preferably broken out into video data 302 and audio data 304 streams, each of which contains numerous data packets representing individual media objects. For example, video media objects for a sports car 306, a minivan 308, and a sport utility vehicle 310 are provided as well as the corresponding audio media objects 314, 316, and 318. The controller 212 suitably determines, based on the user profile and/or other variables (for example, a demographic area), which of the media objects to select 324 and 332.

Additionally, in certain embodiments wherein the advertiser desires a digital version of a user to appear in the commercial 322, such a media object may also be generated and selected. For example, the commercial might superimpose a media object of the user as the driver of the vehicle. Similarly, audio data on the user 330 (for example, a specific language or dialect) might also be selected by the controller.

Upon selecting a video media object and an audio media object, such objects are then commonly decompressed 326 and 334, respectively, and provided to the composition generators 328 and 336. The composition generator then generates output signals for presentation on the

corresponding video and audio presentation devices 338 and 340. In short, the present invention enables content providers to target their advertising and programming to users by providing media objects which are selected either by the transmission side and/or the receiving side based upon a user's profile.

5 One process preferably utilized by the aforementioned system to provide media object based targeted advertising and programming is illustrated in Figure 4. As shown, the process provides for the pushing of a media object based advertisement, which is targeted to specific users and does not rely upon the user selecting or specifying media objects. The process begins with determining profiles for the user audience (Block 402). It is to be appreciated that various  
10 methods may be used to determine a make-up of a given user audience, including, for example, using a sign-on and password to a system transmitting the program content. Any system or process for determining a user audience (including statistical processes) may be utilized. Preferably, the user profiles are determined at the transmitting system or by the media object creators such that media objects are pushed to users without requiring any user input or  
15 interaction. However, the user profiles, as discussed previously, may be determined at the receiving system or in combination with the receiving system. When the receiving system determines which media objects are to be presented to the user, multiple media objects are preferably pushed to the user and the receiving system merely selects one of the pushed media objects, based upon the user profile, and does not request media objects from the transmitting  
20 side.

After the user profiles are determined, the process continues with the user selecting the desired programming (Block 404) to be received and presented. Preferably the user's choice of programming is communicated to the transmitting side (i.e., to the media object creators 108 and the transmitting system 102) by the receiving system 104. As is commonly known, many  
25 transmitting systems (especially cable systems and satellite systems) enable a user to select from

numerous programming options at any instant. The present process preferably provides for the real-time communication of user programming choices back to the transmitting side such that targeted media objects may be pushed to the user for presentation during the selected programming signal. However, it is to be appreciated that the process of Figure 4 may also be accomplished in systems, which do not provide feedback of user programming choices to the transmitting side. In such systems, the receiving system 104 utilizes various stored profiling rules and protocols (which, for example, may be periodically downloaded and updated in the system or permanently built-in), which correspond to profiles pre-established at the transmitting side, to determine which media objects in a selected program to present to a user, based upon the user's profile.

Additionally, it is to be appreciated, that the media objects selected for transmission to a user may be in conformance with a user profile, or may be items which attempt to steer a user towards a second profile. For example, a user profile indicating that a user prefers Coca-Cola® might result in media objects associated with Pepsi® products being presented during the program, perhaps as an attempt to lure the user into trying Pepsi products. Further, as discussed above, such media objects may be provided as separate advertisements or in the program itself. For example, a program may contain a scene in which the actor drinks from a soft drink can. The present invention enables content creators to specify from which soft drink can the actor drinks by using media objects which are selected by the transmitting system or the receiving system based upon a user profile. For example, the actor may drink from a Pepsi can instead of a Coca-Cola can. Those skilled in the art appreciate that MPEG-4 and other object based formats enable the content creators, the transmitting system, and/or the receiving system to effortlessly and seamlessly replace a first media object of a Pepsi can with a second media object of a Coke can, such that the actor appears to drink from the desired product.

After the programming choice has been made by the user, the process preferably continues with pushing multi-object programming data to the user (Block 406). Preferably, as mentioned previously, the pushed objects are based upon profiles established on the transmitting side based upon the user viewing habits and programming choices. Additionally, for any given program, media object creators generally desire to create media objects for a given number of profiles (for example, Coca-Cola drinkers might be a first profile, while Pepsi drinkers are a second profile). Instead of creating a unique media object for each user's profile, the process preferably pushes media objects to specific users based upon user identifiers. Such identifiers are periodically loaded into the receiving system 104 and/or data storage device 114 such that when the receiving system 104 receives the multi-object programming data, the receiving system 104 is programmed to select a specific media object based upon the user identifier. It is to be appreciated, however, that the identification of users who are to receive specific media objects may also be determined and accomplished by various other commonly known data routing and distribution techniques, for example assigning unique nodes on a network to each user. The present invention is not limited to any specific embodiment, and as bi-directional data link throughput capacity increases, various other routing techniques may be utilized to push media object based targeted advertising and programming to users.

Upon receiving the multi-object programming signal, the receiving system 104 then selects specific media objects for decompression, composition and presentation based upon the user's profile (Block 408). The selection of the media objects may be accomplished independently by the receiving system, in conjunction with the user profiling system, and/or in conjunction with the transmitting side. Additionally, the receiving system 104 may be configured such that the media objects and/or profiles available are selected by the user via the user input device 110. Such user control features might prove popular, for example, when a user is watching a program, which for an adult profile contains adult content, but for an adolescent

profile does not contain the adult content. By merely selecting the appropriate profile (with passwords, voice recognition, or other features preventing unauthorized access to the adult content), the system 100 may be configured, for example, to allow parents to control the content of programs, and prevent adolescents from watching adult oriented content.

5           At this point of the process, the media objects to be presented to the user have been selected. The process then continues with synchronizing the various objects and presenting the programming (Block 410). Since each program may contain hundreds of media objects, the process determines whether the selected program has been terminated (for example, by switching to another channel) (Block 412). If the programming has not been switched, the process ends and  
10       restarts with the selection of the new programming signal since a user's profile may vary depending upon the chosen programming. For example, a Kansas State fan watching a national championship football game between Kansas State University and Virginia Tech would probably be interested in receiving an audio broadcast (e.g., player, coach, in-stadium announcer, or radio broadcast), highlights, and other information which is oriented towards Kansas State, whereas the  
15       Virginia Tech fan would prefer to hear the audio broadcast, etc., which is oriented towards their team. By using user profiles and media object based content, each fan can receive the programming they desire. However, when watching the PGA championships, both users may have the same profile and thus do not need separate audio programming, etc. Thus, the system 100 may also be configured to accommodate multiple profiles for each user, wherein the profiles  
20       are dependent upon the programming selected or other variables.

Figure 5 illustrates a process flow utilized to pull media objects by a user. The pulling of content occurs when a user actively requests information from a provider. Commonly, such pulls occur, for example, by a user selecting a particular Web page on the Internet, selecting a particular data feed, etc. In addition to pulling specific programming, Web pages and other  
25       content, the present invention enables a user to pull specific media objects within a program. For



example, a broadcast of a football game may provide users with the option of selecting a desired camera angle for a play (for example, the blimp view, the sideline view, the quarterback view, etc.) by providing multiple media objects within the programming signal. The present invention allows a user to select a media object(s) presenting the desired view and the corresponding audio (for example, the quarterbacks's verbal commands). Alternatively, the user could pull up video stills or graphics/text enhancements for detailed statistics. Advertising can be included in such media objects (for example, the quarterback helmet cam might include advertising by Riddell®, the helmet manufacturer).

As shown in Figure 5, the pull process begins with the transmitting side presenting programming which contains multiple media objects, which the user may select (Block 502). The receiving system 104 receives the programming signal and provides the user (when the user select option is enabled) with a menu of choices of media objects, view angles, etc. which can be selected via the user input device 110. However, the present invention is not limited to requiring a user to select a media object via menus and other traditional methods. Since each element of the programming signal is a distinct media object (for example, as provided in programming utilizing the MPEG-4 format), the user may simply select or designate the object and obtain the desired view or information. For example, during a broadcast of the Indy 500, a user could select a car on the screen and then receive the programming from the driver's viewpoint. Thus, the process of Figure 5 allows the user to determine which content (media objects) they desire to receive (Block 504).

Upon the user's selection of a media object, the process continues with recording the user selection in the user profiling system (Block 506). The user's selections are utilized by the user profiling system to create a more complete profile of the user. For example, a user selecting a media object relating to hiking boots, is most likely interested in additional outdoor gear. Such information may be utilized to tailor advertising to such gear during breaks, for example, in

football games. The process also provides information about the user's selections to the transmitting side (Block 507). The information provided may range from the highly specific to the non-specific and anonymous habits of a geographic region, as required by privacy constraints, data processing capabilities, and other factors.

5        Upon receiving the user's selection of a media object, the process modifies the programming (Block 508). At this point the receiving system selects and displays the image from the quarterback cam or the particular racecar. Additionally, when a bi-directional communications link is provided between the transmitting side and the receiving system, media objects might actually be modified by the transmitting side prior to transmission. For example,  
10        the next commercial advertisement or programming segment may include images from the earlier selected view.

Next, the process continues with the receiving system receiving the media objects, selecting the correct object, synchronizing the various objects and presenting the programming to the user (Block 510). Preferably, the selection of media objects by the user and the presentation  
15        of such objects occurs instantaneously from the user's perspective. Those skilled in the art appreciate the data processing speeds, buffers, transmission capabilities and other system capabilities that may be necessary to provide the before mentioned pull of media objects. The present invention may utilize any systems and processes, which provide such capabilities.

When the media object being presented ends, the process continues with the regular  
20        programming being presented (Block 512). For example, after a play is viewed through the quarterback cam, the presentation returns to the sideline view or regular programming view and then, for example, allows the user to select another view or continue with the current view. The present invention may also be configured to continuously process a stream of media objects until a command is received from the user. During such a presentation, the system 100 continues to  
25        provide targeted advertising in the form of media objects, record user responses thereto, and

create/modify user profiles. In short, the process of Figure 5 enables a user to select and pull content, based upon their individual preferences, via the use of media objects. Such pulls may then be utilized to generate user profiles and target advertising to users based upon such profiles.

While the present invention has been described in relation to a preferred system  
5 embodiment and various process flows, it will be appreciated by those skilled in the art that changes in the above descriptions or illustrations may be made with respect to form or detail without departing from the spirit and scope of the present invention.